SPACE TRACKS

A NAVAL SPACE COMMAND BULLETIN ON NAVAL SPACE ISSUES AND INITIATIVES APRIL 2001

GEOSAT Follow-On

Navy Accepts New Oceanographic Satellite

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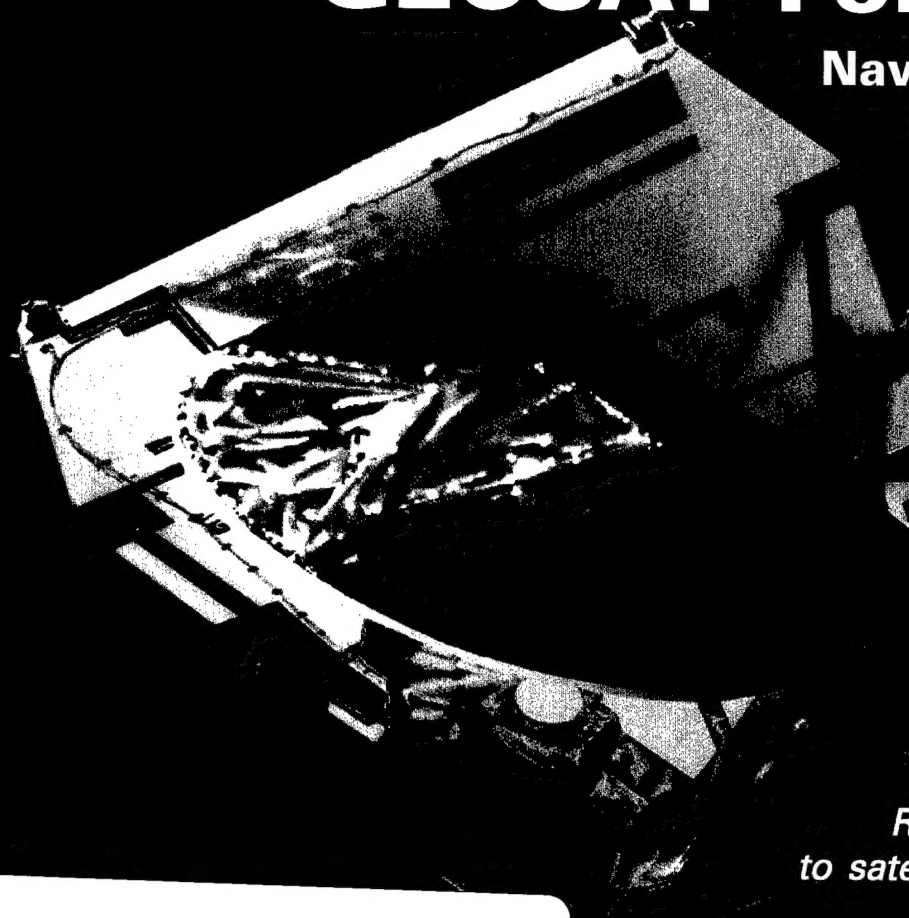

Hang In There

Contract awarded for Wideband satellite system

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Sharpening Our Eye On Space

A program is underway to enable the U.S. to detect smaller objects in space with greater accuracy

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Space Support Services

Naval Space Command provides direct space support to Fleet and Fleet Marine Force operational units around the world, whether for routine deployments, exercises, or actions in response to a crisis situation. We take very seriously our duty of ensuring that our Sailors and Marines understand what products are available from space, how to access them, and how to exploit those products in the waging of war and peace.

❍ **Operational Status/Exercise Support Summaries**
Naval Space Command maintains a home page on the Global Command and Control System (GCCS) accessible to operational U.S. military forces worldwide at http://navspac1.navspace.navy.smil.mil or http://206.36.197.10.

❍ **Naval Space Operations Center** (540) 653-6500
Call Toll-Free at 1-888-404-6557. Source of space-related operational intelligence. Space reports and analyses are activated on request and are tailored to a deploying unit's operations and geographic area of movement. Tactical assessments of space system capabilities and vulnerabilities to potentially hostile space sensors are also available.

❍ **Naval Space Support Teams** (540) 653-6160
Naval Space Support Teams provide tailored information and training at all operational levels to include on-site training, exercise support, and staff augmentation.

❍ **Remote Earth Sensing Information Center** (540) 653-6520
Naval space Command employs imagery from remote Earth sensing satellites to support intelligence, planning, and operations. Our Remote Earth Sensing Information Center (RESIC) — formerly known as the MSI Cell — processes Landsat, SPOT, and Controlled Image Base (CIB) data in support of Fleet and Fleet Marine Force units. Hardcopy and softcopy products, specifically tailored to users' needs, are produced by RESIC and distributed to support forces participating in real-world crisis, operations, and exercises. RESIC products can be produced to support any of the following applications:

- Planning
- Target Area Analysis
- Bathymetry
- Order of Battle Disposition
- Change Detection
- Broad Area Coverage
- Intelligence Prep of the Battlefield
- Mission Rehearsal
- Amphibious Support
- Supplement MC&G Products
- Trafficability

Product requests can be submitted via GENADMIN message to: COMNAVSPACECOM DAHLGREN VA//N313//, via facsimile to DSN 249-6167 or (540) 653-6167, via email to MSI@manta.nosc.mil, or via Naval Space Command's SIPRNET web page.

❍ **Internet On-Line Access**
Naval Space Command maintains a home page on the World Wide Web at URL http://www.navspace.navy.mil. Comments or requests for information may be forwarded to the Public Affairs Office via email to gwagner@nsc.navy.mil.

SPACE TRACKS

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PRODUCTION
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CIRCULATION
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SPACE TRACKS is published four times a year in January, April, July and October as an official, authorized publication of Naval Space Command. Its purpose is to discuss naval space issues and initiatives, and promote a broader awareness of space support available to the naval warfighter. Information contained in *Space Tracks* does not necessarily reflect the official views of the U.S. Government, the Department of Defense, or the Department of the Navy. The editorial content is prepared by the Public Affairs Office of the Commander, Naval Space Command.

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Rear Admiral Richard Mauldin Assumes Command

Rear Admiral Richard J. Mauldin relieved Rear Admiral J. J. Quinn as commander for Naval Space Command this month.

Rear Admiral Quinn, who held command since June 2000, accepted an appointment as the senior military assistant to Secretary of Defense Donald Rumsfeld in February.

Rear Admiral Mauldin reports from his previous tour as Commander Task Force Navy Marine Corps Intranet (CTF NMCI) in the Space, Information Warfare, Command and Control Directorate on the staff of the Chief of Naval Operations. He becomes Naval Space Command's 15th commander.

A native of Porterville, Calif., Rear Admiral Mauldin originally enlisted in the Air Force in 1967. He served overseas in the Philippines and Taiwan and flew as a combat crewman based out of Offutt Air Force Base, Neb., prior to being honorably discharged in May 1975.

He graduated from the University of Nebraska in December that year and subsequently received an officer's commission through the Aviation Officer Candidate School Program. He was designated a Naval Flight Officer in November 1977.

Rear Admiral Mauldin

His first fleet tour was with Carrier Airborne Early Warning Squadron VAW-117 where he deployed to the western Pacific and Indian Ocean with Carrier Airwing 2 aboard the aircraft carrier USS *Ranger*.

Subsequent assignments were with VAW-110, the west coast E-2 Fleet Replacement Squadron, and VAW-115, the Navy's only forward deployed E-2 Squadron. During this latter tour, he served as administrative officer and maintenance officer while participating in numerous joint and combined exercises in the western Pacific and Indian Oceans aboard the aircraft carrier USS *Midway*. After two years with the Naval Military Personnel Command in Washington, D.C., Rear Admiral Mauldin returned to VAW-110 for an 18-month tour as the executive officer.

In April 1991, he reported as the executive officer of VAW-115, assuming command of the squadron in June 1992. During this tour he was instrumental in helping to establish the no-fly zone over southern Iraq.

Following his graduation from the Naval War College, he reported as deputy commander for Carrier Air Wing Five in 1995 and assumed command of the air wing a year later. Following a 23-month command tour, he reported to the Joint Staff in June 1998 as the deputy director for C4 command operations in the Command, Control, Communications and Computers Directorate. He was placed in charge of the Navy's NMCI task force in October 2000.

Space More Critical to National Security

By Gerry J. Gilmore

American military involvement in space will become more critical to national security in coming years, said U.S. Space Command's top officer.

"Most anyone involved in military operations, whether military or civilian, would tell you space is becoming increasingly important," Air Force Gen. Ralph E. Eberhart, SPACECOM commander in chief since February 2000, said in a March 28 interview with the American Forces Information Service.

U.S. Space Command coordinates the use of U.S. military and civilian space assets to support, enhance and control space operations and computer-network defensive and offensive missions. It is one of the nine unified commands in DoD that have operational control of U.S. combat forces.

Satellite imagery, missile warning and targeting information that space-based systems provide have proven their military worth to U.S. defense planners throughout the past decade, Gen. Eberhart said. That data, for instance, contributed to victory during Operation Desert Storm and the 1999 Kosovo air campaign, he noted.

"Look back to how we leveraged our space assets in Desert Storm, compare that to Kosovo — or how we can leverage them even today as we have made advancements since Kosovo — and I think it is obvious how important and how much we rely on capabilities that are resident in our information that moves through space," he said.

This month, Secretary of Defense Donald Rumsfeld is expected to provide his formal response to recommendations in a report issued Jan. 11 by the Commission to Assess U.S. National Security Space Management and Organization. Prior to his nomination to be secretary, Rumsfeld chaired the commission, which, among other things, sought to determine if any changes need to be made to improve the United States' national security posture and capabilities in space.

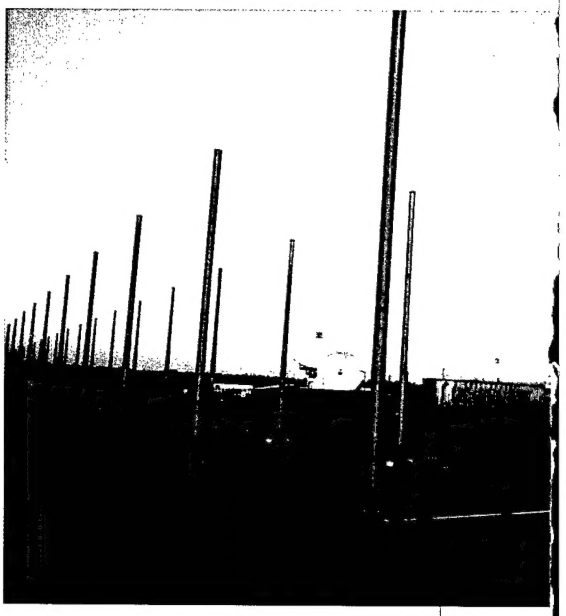
Six months of research and interviews with the country's leading space experts, including Gen. Eberhart, convinced the

*(Please see **Critical** on page 6)*

SPACELINES

CONFERENCE ADDRESSES ROTHR OPERATIONS & ENHANCEMENTS

Improving Counter-Drug Operations



Fleet Surveillance Support Command (FSSC) hosted U.S. Southern Command's Relocatable Over-the-Horizon Radar (ROTHR) User's Conference on Jan. 30-31. Over 70 people from various counter-drug commands and the research and development community attended the two-day meeting held at FSSC's headquarters at Naval Security Group Activity Northwest in Chesapeake, Va.

The principal theme of this year's conference was "Expanding ROTHR capabilities in the source region: Colombia and Beyond." The main objective of the event was to provide an improved understanding of current air surveillance issues and to revise ROTHR research and development requirements in order to better address identified deficiencies.

Air Force Major General James N. Soligan, Southern Command's director of strategy, policy and plans, opened the conference and was the guest speaker at an awards banquet on Jan. 30 held at the Holiday Inn Hotel in Chesapeake.

During the banquet, Major General Soligan awarded letters of achievement from SOUTHCOM to civilian employees and contractor personnel to recognize their outstanding contributions in the areas of operations, program management and R&D for the installation of the most recent ROTHR facility at Puerto Rico.

Major General Soligan also presented the Army Meritorious Civilian Service Award to Mr. Bob Williams on the occasion of his retirement from the SOUTHCOM staff where he served as senior science advisor and had been a strong proponent of ROTHR since the program's inception.

The main focus of the first day of the conference was operations, intelligence and technology. Cmdr. Patricia Cole, commanding officer for Fleet Surveillance Support Command, provided a current ROTHR operations update. Subsequent presentations centered on support of air interdiction operations in the source zone (South America) as well as the transit zone (Caribbean) and improving the common operation picture. Users and operators alike from SOUTHCOM, the Joint Inter-

(Continued on page 5)

Cmdr. James Trump Reports as NAVSOC Executive Officer

Navy Commander James C. Trump reported to the Naval Satellite Operations Center (NAVSOC) in Point Mugu, Calif., as the command's new executive officer in October. He relieved Cmdr. Monica Mathern.

Cmdr. James Trump is a native of Valparaiso, Ind., and a graduate of the University of Notre Dame with a bachelor's degree in civil engineering. He entered the Navy via the Aviation Officer Candidate School in Pensacola, Fla., and was commissioned in 1979.

After completing flight school, Cmdr. Trump was designated a Naval Aviator in 1980 and reported to Helicopter Anti-Submarine Squadron Light 32 (HSL-32) in Norfolk, Va., for his first fleet tour flying the SH-2F Light Airborne Multi-Purpose (LAMPS) MK-I helicopter.

He served as detachment operations officer, detachment maintenance officer and the squadron assistant maintenance officer. He participated in two Mediterranean deployments during this period.

Cmdr. Trump

His initial shore duty tour, also in Norfolk, was with Fleet Replacement Squadron HSL-30 in 1984 where primary duties included assistant training officer and squadron NATOPS officer.

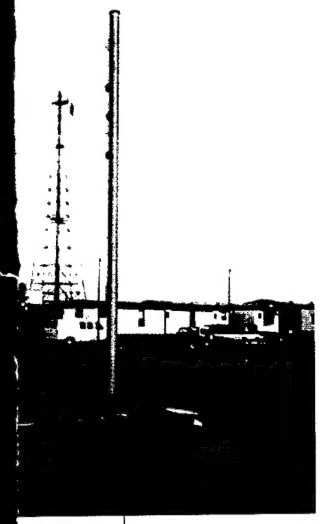
From 1987 to 1992 he served in sea tours with HSL-36 in Mayport, Fla., and HSL-37 in Barbers Point, Hawaii, were he acted as the helicopter detachment officer in charge for two Mediterranean deployments and one WESTPAC deployment, respectively. Cmdr. Trump also performed the department head duties of squadron training officer and squadron operations officer while assigned to these fleet squadrons.

Cmdr. Trump then attended the Naval Postgraduate School in Monterey, Calif., and was awarded a master's degree in astronautical engineering in 1995.

He subsequently served with Tactical Air Control Squadron 12 (TACRON-12) in San Diego, Calif., from 1995 to 1997, where he was the air officer for Commander Amphibious Squadron 11 and the 31st Marine Expeditionary Unit aboard USS *Belleau Wood* (LHA-5) which was forward deployed to the 5th Fleet AOR.

He was then assigned as the officer in charge of the Joint Services Training Program (JSTP), also in San Diego, a special access program administered by the Joint Personnel Recovery Agency (JPRA), until October 2000.

Cmdr. Trump has over 3,000 flight hours and over 500 small deck landings. His personal decorations include the Meritorious Service Medal, two Navy Commendation Medals and two Navy Achievement Medals.



Three ROTHR receiver antenna arrays (pictured), located in Virginia, Texas and Puerto Rico, are part of a unique long-range air and surface surveillance asset operated by the Navy in support of counter-drug operations in the Caribbean.

Conference

(Continued from page 4)

agency Task Force East, U.S. Southern Command Air Forces, the Joint Southern Surveillance Reconnaissance Operations Center and FSSC each gave their operational perspective and assessments of air movements of drug trafficking in the source zone.

Day two's theme shifted toward current research and development efforts for the ROTHR system. The stage was set by a presentation of how the ROTHR system operates, including the system's advantages over microwave radars and the system's limitations, all from the operator's perspective. This was followed by a brief description of current R&D efforts and the program manager's requirements for both system enhancements and further R&D.

To complete the day's events, there were various scientific presentations and discussions over future developments to enhance the ROTHR system. This will ultimately lead to providing a better product for the end user fighting the war on drugs.

A copy of the conference presentations can be obtaining by e-mailing your request to fsscops@fssc.navy.mil or by calling the Fleet Surveillance Support Center at (757) 421-8530.

Naval Space Leadership Assesses Space Commission Report

By Gary R. Wagner

Senior Navy and Marine Corps military and civilian leadership met Feb.13 to discuss the Space Commission report and its potential ramifications for the department, and to prepare an official Navy position on the report for endorsement by the Chief of Naval Operations and Secretary of the Navy. The department's response to the report was delivered to the Secretary of Defense on March 2.

The one-day meeting was sponsored by Vice Admiral Richard W. Mayo, director of Space, Information Warfare, Command and Control, and hosted by Rear Admiral J. J. Quinn, commander for Naval Space Command in Dahlgren, Va.

Fifteen flag-level officers and civilians participated. Organizations represented included the OPNAV staff, Headquarters Marine Corps, Space and Naval Warfare Systems Command, NAVSPACECOM, Office of Naval Intelligence, Naval Research Laboratory and the Center for Naval Analysis. Also among the attendees were retired Vice Admirals David Frost, Herb Browne and Lyle Bien, former NAVSPACECOM commanders.

In general, the participants concurred with the recommendations of the Space Commission report as a whole. As expressed in a memorandum for the Secretary of Defense, later signed by CNO, Commandant of the Marine Corps and Secretary of the Navy, the conferees said they "look forward to an active role in implementing those (Space Commission) recommendations to better enable joint land, air and maritime warfighting using space assets."

However, the assembled Navy and Marine Corps leadership also voiced concerns regarding how the Space Commission's recommendations are to be implemented.

From the standpoint of the naval services, the effectiveness of any new National Security space organization will hinge on its ability to properly balance and fulfill naval warfighting requirements and needs.

The conferees agreed that the plan will need to address the mechanisms for maintaining an effective joint space cadre of both military and civilians throughout the National Security space organization, strong space science and technology and research and development organizations within all uniformed services, the education of our warfighters in the use of space systems, and strategic partnerships across the Department of Defense.

Interservice Space Training

Interservice Space Intelligence Operations Course (ISIOC)
The ISIOC is offered at the SI/TK level to military and civilian personnel (O-4 and below) in all the armed services who work as space system operators.

23 JUL - 03 AUG 01 20 AUG - 31 AUG 01 17 SEP - 28 SEP 01

Interservice Space Fundamentals Course (ISFC)
For Army, Air Force, Navy and Marine Corps officers, enlisted personnel and civilian employees entering nonoperator staff positions who need to be knowledgeable of space operations, activities and environment. ISFC is offered at the Secret clearance level.

18 JUN - 03 AUG 01 20 AUG - 31 AUG 01 17 SEP - 28 SEP 01

All courses are conducted at the Air Education and Training Center, Colorado Springs, Colo., unless otherwise indicated. To obtain a quota, or for further information, contact Bonnie Watson at (540) 653-5151, DSN 249-5151, or email bdwatso@nsc.navy.mil. The following information is needed: name, rank/rate, Social Security number, UIC, billet title and phone/FAX.

SPACE BILLETS

OFFICERS The following is a partial list of officer billets with space missions, whose incumbents are scheduled to transfer between now and December 2001. For specific billet information and actual availability dates, contact your detailer.

Billets With Subspecialty Code XX76 (Space Systems - Operations)

ACTIVITY	TITLE	BDES	BGRD	BSUB1	BSUB2	AVAIL
CNSC DET VB	AF EXCHANGE OFF	1000	LT	0076P		AVAIL
NAVSPACECOM	OPS/INTEL ANALYST	1000	LT	0076S		AVAIL
NAVSPACECOM	OPS/INTEL ANALYST	1000	LT	0076S		AVAIL
NAVSPACECOM	DIV DIR OPS/INTELL	1050	CAPT	0076R		AVAIL
NAVSOC	STF PLANS AND OPS	1000	LT	0076S		0107
NAVSPACECOM	OPS/INTEL ANAL	1100	LT	0076S		0107
USN ELMT DODPROJ	DIR MIL SUPPORT	1050	CDR	0076B		0107
SPAWAR	SPACE PROJECTS	1610	LCDR	0076P		0108
NAVSPACECOM	HEAD FLEET SUPPORT	1000	CDR	0089P		0108
USSPACECOM	CHIEF SATCOM	1100	CDR	0076P	0089S	0108
USSPACECOM	CHIEF FORCE	1000	CDR	0076P		0109
USSPACECOM	VICE DIR INTELL	1630	CAPT	0076S		0109
NAVSPACECOM	OPS/INTEL ANALYST	1000	LT	0076S		0110
DEF INTEL AGENCY	MT SURV PM	1630	LCDR	0076S		0110
NAVSPACECOM	OPS/INTEL ANALYST	1050	LT	0076S		0110
USSPACECOM	SPACE CONTROL	1050	CDR	0076S		0110
NAVSPACECOM	OPS/INTEL ANALYST	1100	LT	0076S		0110
USSPACECOM	EXERCISE DEVELMNT	1050	LCDR	0076S		0110
OPNAV	COMM PLN&OPS/N	1000	LCDR	0089R	0076S	0112
USSPACECOM	MRP/IPL OFF	1050	LCDR	0076P		0112
NAVSPACECOM	OP INTEL ANALYST	1630	LT	0076B		0112
USN ELM DODPROJ	DP DR JT SUP	1050	LCDR	0076B		0112

Billets With Subspecialty Code XX77 (Space Systems - Engineering)

ACTIVITY	TITLE	BDES	BGRD	BSUB1	BSUB2	AVAIL
SPAWAR	SPACE ACQ/DEP	1510	LCDR	0077P		0107
NAVAL ACADEMY	INST/ENG	1440	LCDR	0077P		0108
SPAWAR	NAVY PLANT REP	1510	CDR	0077P		0108
SPAWAR	SPACE ACQ/DEP	1510	LT	0077B		0108
SPAWAR	DEP DPJ MGR	1510	CDR	0077P		0109
DISA	SAT COMM	1440	LCDR	0077P		0109
SPAWAR	SPACE PJ TECH	1610	LCDR	0077P		0111
NIWA	CLASSIC OWL OPS	1610	LT	0077P		0111
PEO-SCS OFFICE LA	DPJ SUP/UHF	1440	LCDR	0077P		0111
PEOSPACPMMSENS	MGR DPJ FE/APM	1510	CDR	0077P		0112
SPAWAR SPTECH PG	DEP DPJ MGR/DE	1510	CDR	0077P		0112

ENLISTED BILLETS

AT NAVAL SPACE COMMAND
DAHLGREN, VIRGINIA

Following is the allowance for enlisted personnel at Naval Space Command, Naval Surface Warfare Center Dahlgren Division, Dahlgren, Va. Dahlgren is located approximately 50 minutes from Washington, D.C., and three hours from Norfolk, Va. The base is also home to the Aegis Training & Readiness Center and the Navy's only active gun testing range. You will also find a small Navy Exchange, commissary, gymnasium, auto and wood hobby shops, year-round pool, library, chapel, theater, and numerous outdoor recreation facilities. If you would like more information about one of the Navy's "best kept secret" duty stations, or would like a welcome aboard package, feel free to contact the Command Master Chief, CMDMC (SS) Alan P. Steiner. Master Chief Steiner can be reached at DSN 249-6115 or commercial (540) 653-6115 (email address: asteiner@ nsc.navy.mil). If you are interested in receiving orders to Naval Space Command, contact your detailer.

CTA:		E7:1	E6:2	E5:2	E4:1
CTR:			E6:1	E5:2	
EA:		E7:1			
ET:		E7:2		E5:4	E4:2
EW:	E8:1			E5:2	E4:2
FC:			E6:1		
IS:		E7:1	E6:2	E5:4	E4:3
NC:		E7:1			
OS:		E7:3	E6:5	E5:3	E4:13
RM:		E7:2	E6:3	E5:9	E4:1
SK:				E5:1	
YN:			E6:1	E5:2*	

*One YN2 billet is TAR.

Critical

(Continued from page 3)

commission that space should become a top national security priority.

"We'd be kidding ourselves if we said we couldn't do it better, (and) our goal ought to be to do it better tomorrow," said Gen. Eberhart.

For example, he noted that DoD space specialists could make more effective use of available communications bandwidth, and become better at processing and disseminating information "to get inside the enemy's decision-cycle."

"We gather data," Gen. Eberhart said. "How can we change that data to information which can lead to decisions? That is the real key. We're working hard, we have some wonderful people out there, and we have a great partnership with industry, with commercial suppliers."

A Rumsfeld space commission news release called the likelihood of future conflict in space "a virtual certainty." Because of this, the commission noted, the United States should take immediate steps to develop superior space capabilities.

Some critics say the United States won't need such enhanced capabilities for 25 years or more, when a peer may arise to challenge America militarily in space. Other critics say there should be no military use of space, but Gen. Eberhart believes this has already occurred.

"We have, in fact, militarized space," he said. "We use space assets, space information for military applications. We've been doing that for decades. The trend is increasing, not just for the United States of America, but also other countries, both friends and possible foes.

"So, I think we've crossed that bridge," he concluded. — *American Forces Information Service*

ELECTROMAGNETIC INTERFERENCE

An Achilles Heel

By CWO4 Todd D. Conley

Our military women and men continue to be sent into harm's way with electronic equipment and systems that are not only susceptible to, but incapable of working through, electromagnetic interference (EMI). As an organization, we in the Department of Defense (DoD) fall short in our ability to detect, characterize, and report EMI, let alone geographically locate sources before we can even attempt to resolve interference.

Electromagnetic interference is a combination of terms that broadly refers to any type of interference that can potentially disrupt, degrade or otherwise interfere with authorized electronic emissions over approved portions of the electromagnetic spectrum. Some are probably more familiar with the term "radio-frequency interference (RFI)," which is actually a specific type of EMI.

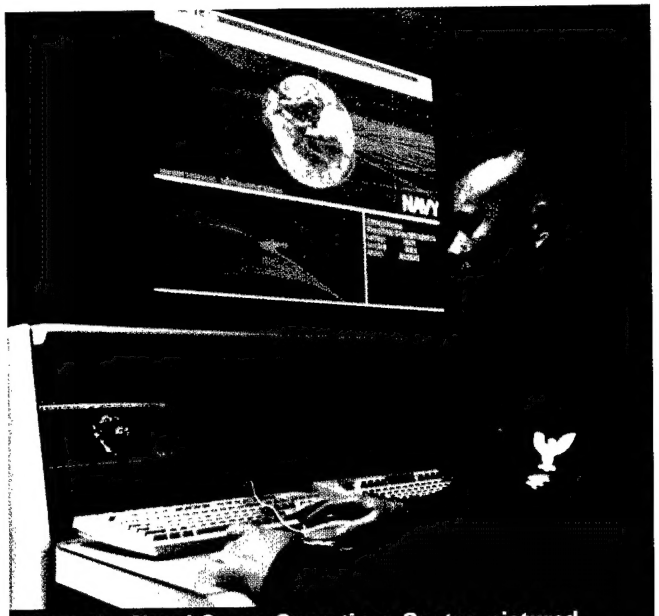
A common thought is that EMI is caused by dynamic factors, such as spurious emissions, space weather, or geomagnetic and atmospheric conditions. In other words, electromagnetic disturbances that affect electronic systems equate to EMI.

However, it would be prudent for us to expand our mindset slightly in this regard to include any cause, active or passive, as electromagnetic interference. The key being, if it affects electronic emissions, it should be considered EMI. This broader definition of EMI would encompass more static causes, such as geographical and manmade obstructions.

Causes of EMI can be intentional or inadvertent, hostile or friendly, military or civil, and foreign or domestic. They can come from a jamming device, malfunctioning equipment, or improper system operation. A mountaintop, clump of trees, building, and platform design can also be contributing factors. Regardless of the cause or intent, the effect is always the same — interference of our electromagnetic emissions.

Electronic jamming, while not common in our everyday operations, is nonetheless a potential threat against which we need to be ever ready to guard and overcome. What occurs much more frequently than is generally realized is interference from extraneous navigation and telecommunications systems, and other sources.

Then, there's our being our own worst enemy, as we periodically interfere with our own systems through less-than-optimal equipment operation and procedures. An example that illustrates the gravity of EMI on one area of telecommunications — ultra-high-frequency (UHF) satellite communications — is worth noting.



From the Naval Space Operations Center, pictured above, watchstanders monitor and analyze incidents of satellite interference around the clock and work with operational forces to resolve those problems.

There are a total of 358 UHF satellite channels (i.e., sets of frequencies) available globally for use by DoD. While that number may seem large, these channels satisfy less than 44 percent of our validated requirements for this particular medium.

Imagine the impact on our ability to communicate when just one channel experiences EMI. When a channel becomes degraded or unusable due to EMI, we are many times faced with a domino effect as we attempt to find an alternate channel, usually in vain. When we do find another channel, it's at the cost of pre-empting a lower priority requirement. The fact of the matter is that on any given day as many as 20 UHF channels are degraded or completely unusable worldwide due to varying degrees and types of EMI.

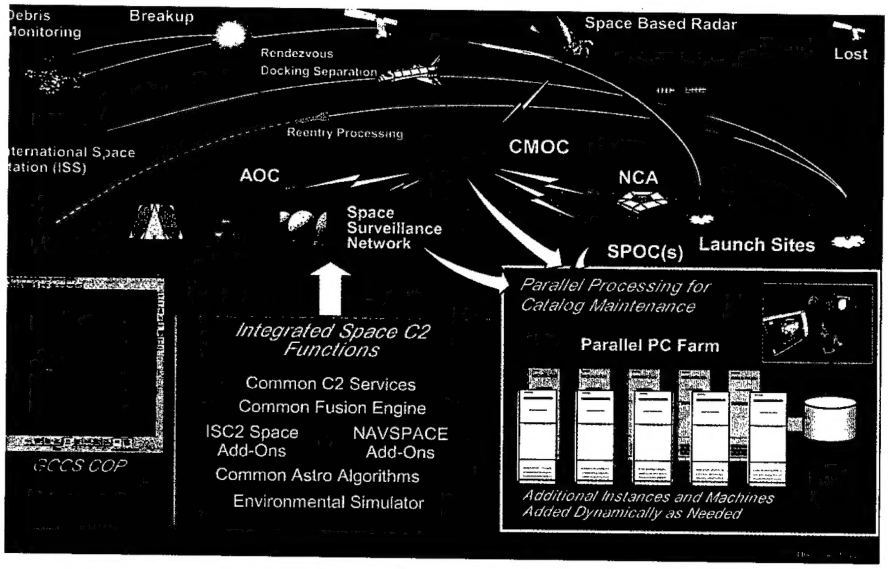
There's a weakness lurking in the shadow of our EMI mitigation and resolution posture. While parts of individual service organizations work some aspects of EMI to varying degrees, these fragmented efforts are for the most part autonomous and narrowly focused with no centralized, upper-level management and oversight.

In spite of this, a lot of good people are making valiant attempts to work EMI issues in their respective areas. Overall, though, we're fighting an extremely frustrating battle with rare, and then, only short-term success.

We truly don't have an effective means to swiftly combat and overcome EMI. Detection and characterization of offending signals, reporting and tracking of incidents, geographical location and identification of sources, and resolution are all essential phases in working an EMI event. Mitigation is also a very important part of the process.

Furthermore, growing competition for portions of the frequency spectrum and equipment limitations make our ability to operate through EMI increasingly prob-

*(Please see **Interference** on page 14)*



ISC2's integrated space architecture, portrayed in the graphic (left), will enable better command and control decision making and information support. LMMS Graphic

ISC2 Navy Space Expertise, Acquisition Programs Will Contribute to An Affordable Solution

By Steven E. Heinlein

Naval Space Command hosted an Integrated Space Command and Control (ISC2) Conference on Feb. 6-7. Over 50 people attended the meeting, held in Dahlgren, Va.

The main purpose of the conference was to familiarize the Lockheed Martin Mission Systems (LMMS) team with NAVSPACECOM operations and hardware and software systems. This knowledge will then be used to support future system integration and interoperability of command and control node requirements.

The ISC2 contract was awarded in the fall of 2000 to Lockheed Martin. Their main responsibility is to integrate multiple U.S. Space Command legacy systems into the North American Aerospace Defense Command/U.S. Space Command Warfighting Support System (N/UWSS), a common interoperable C2 information technology infrastructure.

"ISC2 will be a collaborative, distributed command and control system for battle management, providing tighter coordination of forces and unparalleled information support to warfighters," explains Terry Drabant, president of Lockheed Martin Mission Systems.

Improved interoperability among air, missile and space defense systems gives commanders enhanced capabilities of shared, real-time data, a faster response to enemy actions, and improved coordination among forces.

The ISC2 contract could be extended up to 15 years and assigns responsibilities for all aspects of life-cycle support to one vendor. It will replace the current legacy systems in the Cheyenne Mountain Operations Center (CMOC) through an evolutionary approach that complies with DoD interoperability guidance and standards.

Leverage to Lower Costs

The Lockheed Martin team draws on a strategic core group of aerospace industry leaders with experience as systems integrators, including Boeing Co., Aerojet, General Dynamics, DynCorp and Wang Government Services. A website with background information about the ISC2 program is located at http://www.lockheedmartin.com/isc2.

The conference revealed several technical areas where related Navy and Air Force acquisition programs could leverage each other's efforts. Such cooperation may serve to lower development and life-cycle costs for the Department of Defense, while improving joint service interoperability.

The conference agenda included tours of NAVSPACECOM's Naval Space Operations Center and ADP center. Michael P. Carr, head of the Engineering and Integration Branch, briefed the command's Mission System architecture.

Air Force Lt.Col. Torres from the operations directorate at USSPACECOM presented that command's view on astrodynamic standardization. He encouraged the community to explore technical areas cooperatively with an end to joint solutions and concepts of operations between Naval Space Command and the N/UWSS.

Additional technical discussions led by NAVSPACECOM's Dr. Paul Schumacher and Jon Boers focused on uncorrelated target processing, initial orbit determination, analyses of directed energy/electromagnetic interference, maneuver detection, geosynchronous clustering/collision, and special perturbations methods.

Naval Space Command serves as the Alternate Space Control Center (ASCC) in support of U.S. Space Command. A Service Life Extension Program (SLEP) for NAVSPACECOM will upgrade the command's space surveillance sensor and mission processing system (which also supports the ASCC). This acquisition program is managed by the Space and Naval Warfare Systems Command (SPAWAR). Lt.Cmdr. Ed Najmy from SPAWAR provided an overview of the SLEP initiative to facilitate cooperative efforts between the two programs.

The conference jump-started efforts to define how ISC2 impacts the SLEP and vice versa. A follow-up SLEP technical conference between SPAWAR, LMMS and Naval Space Command was set to determine levels of participation and common areas with an objective of realigning

*(Please see **ISC2** on page 14)*

Spacecraft To Transmit Valuable Environmental Data Directly to Ships at Sea

Navy Accepts Oceanographic Satellite from Ball Aerospace

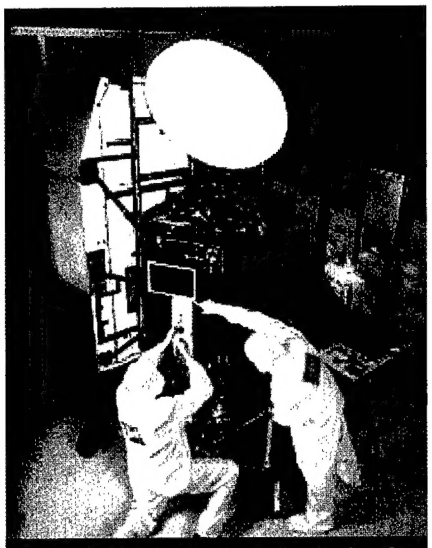
The Space and Naval Warfare Systems Command (SPAWAR) formally accepted the GeoSat Follow-On (GFO) satellite from Ball Aerospace and Technologies Corporation on Nov. 29.

GFO is a meteorological and oceanographic satellite built to transmit data directly to ships at sea and to Navy shore facilities. It is flown in a low-Earth orbit with an exact repeat orbit that produces a repeat ground track every 17 days.

The radar altimeter and water vapor radiometer onboard GFO measure differences in sea-surface height and provide information about wave height, wind speed and glacier ice.

The data collected by GFO is also sent to the Naval Oceanographic Office (NAVOCEANO) to be processed and fed into oceanographic and weather models to improve their accuracy and make their information more useful and effective for the Fleet.

GFO has been operated since its launch in February 1998 by the Naval Satellite Operations Center (NAVSOC) in Point Mugu, Calif. NAVSOC provides telemetry, tracking, and commanding (TT&C) for GFO through its headquarters and its remote ground stations with commanding sites in Laguna Peak, Calif., and Prospect Harbor, Maine, and Doppler beacon tracking sites at headquarters, Prospect Harbor and Finegayan, Guam. NAVSOC was an important part of the military, civil service, and contractor team that worked to resolve the problems encountered with GFO and to secure satellite acceptance.



Scientists perform system checks on the GFO spacecraft prior to its 1998 launch. Ball Aerospace Photo

Acceptance of GFO was delayed by a computer reset problem and a Global Positioning System (GPS) receiver problem. After launch, the spacecraft experienced intermittent resets of its central processing unit. The GFO team analyzed data and characterized the reset problem, and Ball Aerospace provided a progression of flight software changes to address the resets.

The nature of GFO's orbit complicated the implementation of these changes. The short duration of the satellite passes over ground sites made uploading the changes into the satellite flight computer a lengthy process. NAVSOC performed a series of complex, resource-intensive software uploads that eventually resolved the reset problem.

GFO was initially designed by Ball Aerospace to operate with onboard GPS receivers to provide precise time and location information. However, the GPS system could not function as designed and could not provide the precision orbit information needed for operations.

The overall system design and operational procedures at NAVSOC and NAVOCEANO were revised to time-tag the altimeter data with a Ball Aerospace designed ground time-tagging correction system, and to create precision orbits with a combination of the onboard laser retroreflector array and the NASA satellite laser ranging ground station network.

After these problems were resolved, the GFO program had to pass a calibration and validation period. Data from two 17-day exact repeat orbit cycles was collected and analyzed. Adjustments and modifications were made to resolve any measurements or data that did not meet specifications. Once these change were made and tested, the calibration/validation period was started over again until all specifications for GFO data were met.

Thanks to the combined efforts of NAVSOC, Ball Aerospace, NAVOCEANO and SPAWAR, GFO did complete the calibration/validation evaluation successfully. SPAWAR formally accepted the satellite from Ball Aerospace, and GFO is now providing valuable data to the Fleet and to the oceanographic and meteorological communities.

After the upcoming operational transfer of GFO from SPAWAR to Naval Space Command, NAVSOC will continue its cost-effective and reliable satellite TT&C operations on this important Fleet asset.

Naval Satellite Operations Center, based in Point Mugu, Calif., has provided command and control for GFO since its launch in 1998. The command will continue to operate the satellite from its control center (pictured) once it is qualified as an operational system.

SHARPENING OUR EYE ON SPACE

By Gary R. Wagner

A program to rebuild Naval Space Command's space surveillance network, initiated last year, will enable the U.S. to detect much smaller objects, and with greater accuracy.

Operational since 1961, the Naval Space Surveillance System, also known as the "Fence," scans the heavens continuously to detect satellites and predict their orbits.

In its 40 years of operation, periodic upgrades to the very-high-frequency (VHF) radar sensor have enabled it to keep pace with the growing population of spacecraft and debris that encircles the planet.

The Fence is sensitive enough to detect objects as small as 30 centimeters in diameter — the size of a basketball — at altitudes out to 15,000 nautical miles. The Navy's space-looking radar is a key component in a worldwide network of surveillance assets used by U.S. Space Command to maintain a catalog that now contains over 10,000 objects, including active and inactive satellites as well as a plethora of "debris" — rocket bodies, leftovers from exploded spacecraft, even hand tools that escaped the grip of spacewalking astronauts.

A 10-Fold Increase

However, growing concern over the protection of space assets, especially manned space flights, in a space environment that's becoming much more crowded has prompted U.S. Space Command to establish a more stringent satellite tracking requirement: to be able to track objects at least as small as 5 centimeters — the size of a billiard ball.

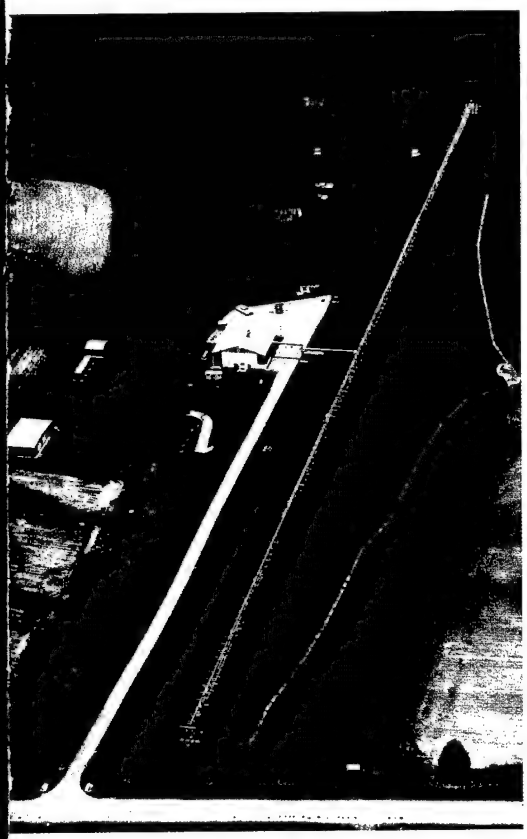
Scientists estimate that lowering the space surveillance threshold to the 5-centimeter size will expand the space object catalog to more than 100,000 items.

In an effort meet this new objective, the Navy is undertaking a comprehensive service life extension program, or SLEP, to radically improve the sensitivity of NAVSPACECOM's space surveillance system.

Managed by the Space and Naval Warfare Systems Command (SPAWAR), the SLEP is a three-phase technology refresh program. The first phase, an analysis of alternatives completed in November 2000, solicited detailed concept studies from industry that considered end-to-end system components and operations used to determine and catalog satellite orbits.

Phase I also required bidders to provide performance cost and a risk tradeoff analysis of the proposed design solution.

The broad, far-reaching detection range of Naval Space Command's space surveillance network, or "fence," is depicted in the computer animation at left. The fence's transmitter site at Jordan Lake, Ala., one of three in the VHF radar system, is pictured in the aerial photo below.



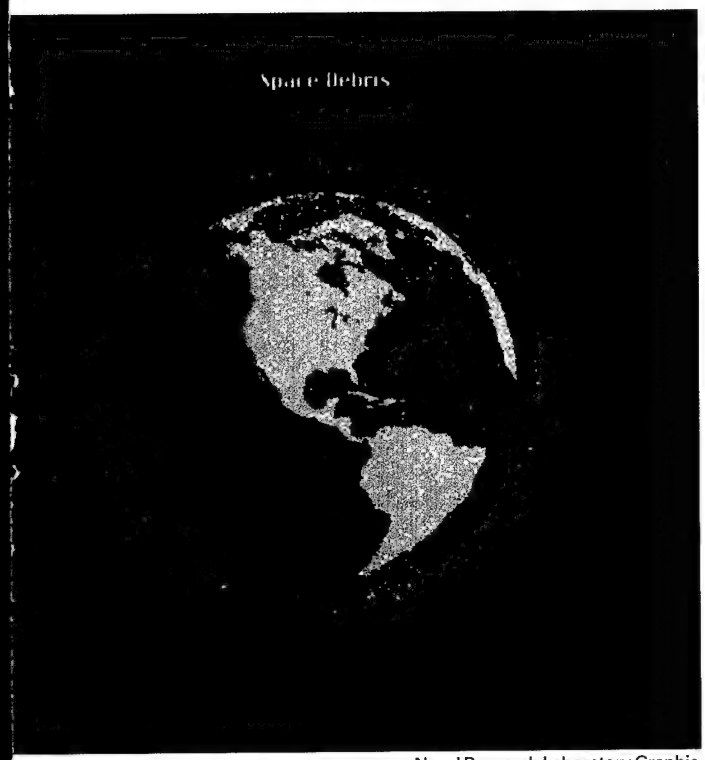
The selected three industry contractor teams were Syracuse Research Corporation and General Research Corporation International, Scientific Research Corporation and Northrup Grumman and ITT.

Phase II of the SLEP began in December 2000 and will last for one year. During this phase, a government-led integrated product team composed of the three Phase I contractors, the Naval Research Laboratory, SPAWAR Systems Center Charleston and Naval Space Command will work to determine the radar operating frequency, model and simulate radar system performance, assist in generating the Phase III request for proposal, and mitigate risk.

The result of Phase II will be an end-to-end system performance specification that will be the basis for Phase III.

Phase III is a six-year, $150 million design, development, manufacturing and installation contract that will provide new field station antennas and electronics and the required computational processing system at Dahlgren.

The Phase III contract award will be made under full and open competition; the three Phase I and II contractors will be eligible to compete.



Naval Research Laboratory Graphic

In the graphic at left, white dots represent a snapshot of the positions of objects in their orbits around the Earth. The red symbols show points of "close approaches" where objects come within 5 kilometers of each other. This analysis is achievable through the observations made by the Navy's "Fence."

"Space Tracking" the Space Station and Space Shuttle

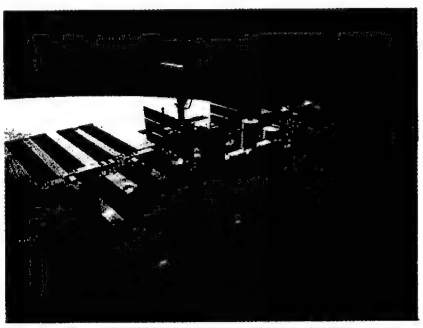
With the high 51.6 degree inclination of International Space Station (ISS) Alpha and Space Shuttle assembly flights to Alpha covering 85 percent of the Earth and 95 percent of the Earth's population, there are frequent opportunities to visually observe both spacecraft from the ground.

Streaking across the sky at 17,500 miles per hour with its new solar arrays fully deployed, Alpha is now the third brightest object in the night sky after the Moon and star Sirius.

NASA provides several websites and an email subscription service to help identify sighting opportunities from your location.

http://spaceflight.nasa.gov
NASA's homepage for Human Space Flight offers a universe of information about the Space Shuttle, ISS and exploration of space. Select the "real time date" tab and then click on "sighting opportunities." The page provides both text-based and web-based listings.

http://liftoff.msfc.nasa.gov
NASA's "Liftoff to Education Home Page" offers an automated email notification of sighting opportunities for specific locations and a wealth of space-related educational materials for all age levels. Select "Tracking" then under "Tracking Satellites" scroll down to the "J-pass" predictor; or drill down directly to http://liftoff.msfc.nasa.gov/RealTime/JPass/PassGenerator/.



NASA Illustration

HANG IN THERE

Help Is On the Way for Tactical Wideband Users

By Ray Gajan

Wideband satellite communications can be a powerful force enhancement. Nearly everyone wants some ... or more of it. Internet access, video teleconferencing, imagery, telephones, all may be provided when the "pipe" is wide enough. The "pipe" is going to get wider and more flexible.

The dominant maneuver, precision engagement, and focused logistics resulting in massed effects envisioned by Joint Vision 2020 (JV 2020) took another step closer to reality when the Joint Requirements Oversight Council (JROC) approved and validated the Wideband Gapfiller System (WGS) Operational Requirements Document (ORD) last May.

Joint Vision 2020

One of the key outcomes of the 1997 Senior Warfighter's Forum (SWarF) was a recommendation regarding satisfaction of high-capacity military satellite communications requirements in the early 21st century. The SWarF called for development of three new DoD-owned, commercial-like, wideband satellites to be launched beginning in FY 2004. These satellites, which have come to be known as the Wideband Gapfiller System, will fill the widening gap between actual wideband capacity and growing user requirements and allow decisions on an Advanced Wideband System to be delayed until emerging technologies and services are better defined.

The WGS will provide high-capacity X-band service compatible with the Defense Satellite Communications System (DSCS), Ka-band Global Broadcast Service (GBS) services comparable to those hosted on the Ultra-High-Frequency Follow-On (UHF F/O) satellites 8, 9 and 10, and a new two-way military Ka-band capability.

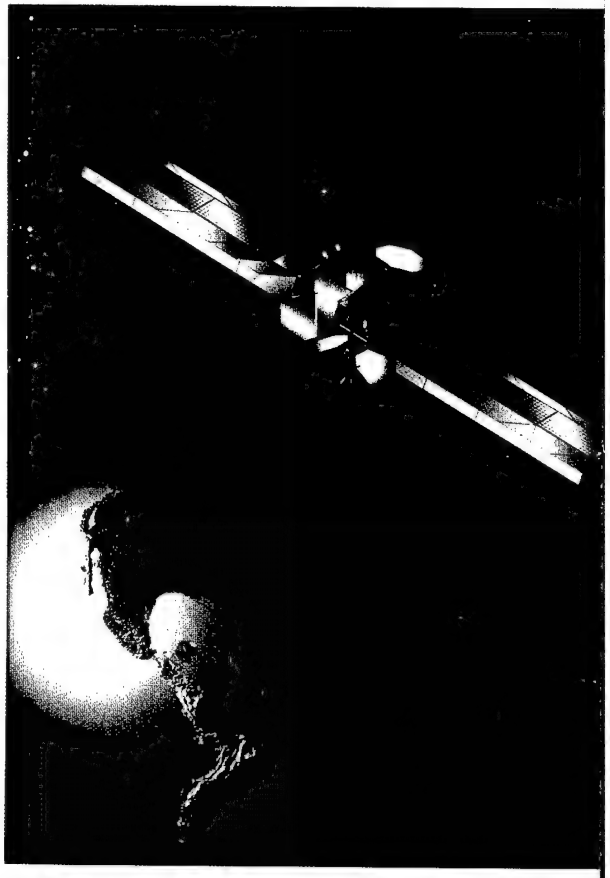
The WGS will become the largest part of what has become known as the Interim Wideband System (IWS). The IWS includes WGS as well as Defense Satellite Communications System (DSCS) III satellites and the GBS hosted on UHF F/O satellites. IWS will provide a wideband communications capability to the warfighter until the Advanced Wideband System becomes operational in the 2010 timeframe.

The primary purpose of the Wideband Gapfiller System is to provide increased satellite communications (SATCOM) capacity to deployed military forces. The WGS is being designed to increase the available capacity to deployed and mobile tactical users which includes Navy ships and Marine combat elements.

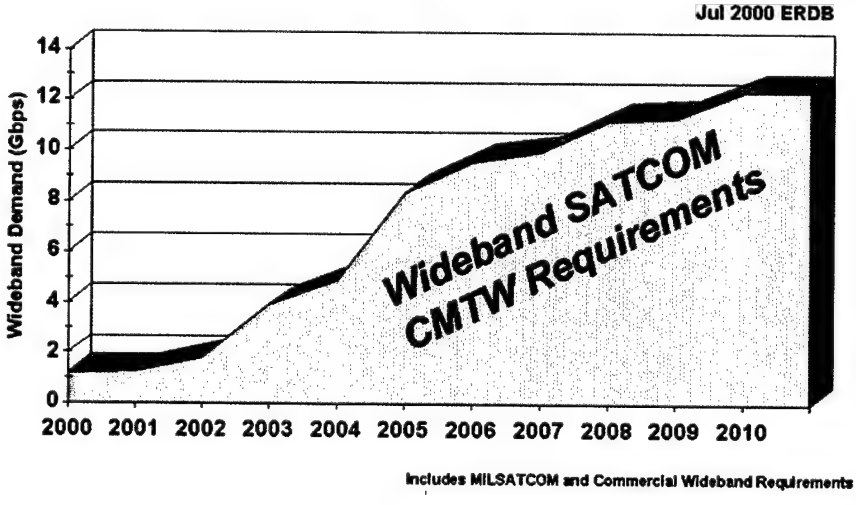
The Navy expects to have more than 75 shipboard terminals capable of operating with the WGS as early as 2007. The Marine Corps plans to employ the legacy AN/TSC-85B and AN/TSC-93B Ground Mobile Force (GMF) terminals as well as new AN/TSC-156(V)3 (STAR-T) and AN/TSQ-190(V) Trojan Spirit II terminals and GBS terminals.

A group representing the services, commanders in chief, DOD agencies, and the Joint Staff drafted the ORD for the Wideband Gapfiller System. Naval Space Command provided the principal Navy representative to the ORD authors group. Close coordination with the CNO staff and the Space and Naval Warfare Systems Command (SPAWAR) SATCOM Terminal Program Office ensured a unified Navy voice.

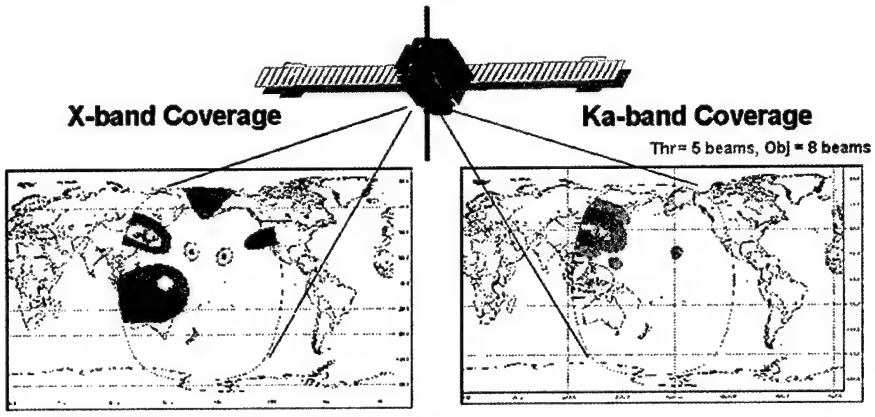
The primary challenge of the ORD au-



Artist's concept of Wideband Gapfiller Satellite
Boeing Space Systems Inc. Illustration



thors group was to capture the essential requirements for a gapfiller system to support the growing needs of globally deployed users with small tactical terminals while remaining within a known, fixed budget. NAVSPACECOM representation ensured that the unique nature of naval operations was accounted for during requirement definition. The group did an excellent job of meeting the challenge without adding bells and whistles to the ORD. As a result, the ORD flowed smoothly through the joint approval process.



WGS capacities specified in the WGS Operational Requirements Document are illustrated above. The contract meets or exceeds all threshold requirements.

Discussions with potential bidders during the Cost As an Independent Variable (CAIV) process determined the requirements were achievable within the fixed budget. Naval Space Command and SPAWAR participated in the CAIV process and SPAWAR is participating in the WGS source selection process.

Just how capable will the WGS satellites be? The ORD identifies a threshold requirement for each WGS satellite to support 1.2 giga-bits per second (Gbps) in user communications throughput. This is more than all of the DSCS and GBS satellites on orbit today are able to provide.

The Department of Defense is buying three of the WGS satellites. The objective requirement is 3.6 Gbps per satellite. All indications are the user community should expect the actual capability of the WGS satellite to be closer to the objective throughput than the threshold.

What type of connectivity can we expect at the shipboard level? The throughput of a wideband satellite is very situational dependent due to multiple users with different terminal characteristics and efficiencies sharing a fixed amount of bandwidth and satellite power. To derive the WGS threshold capacity requirements, the ORD authors group developed throughputs and connectivity that must be provided by one WGS satellite to support a notional major theater war (MTW) in Southwest Asia. A need for simultaneous support of both an MTW and a small-scale contingency in Southeast Asia was evaluated to derive the WGS objective capacity requirements.

The scenarios used to define requirements for satellite capacity are approved by the Joint Chiefs of Staff for use in defense planning. The scenarios require links to AN/WSC-6(V) shipboard terminals in excess of 3 megabits per second (Mbps) and links to submarines in excess of 1 Mbps at threshold. These values are situational dependent, but potential bidders did not consider them to be unrealistic. This projected throughput is significantly greater than is being realized by shipboard DSCS users today. However, satellite communications resources are allocated by the Joint Staff and the CINCs on a priority basis, so there is no guarantee of how much will be assigned to a given platform.

The WGS payload is expected to be very flexible. The satellite will provide a capability to cross-band between X-band and Ka-band. Variable sizes, shapes, and gain contours within the X-band coverage areas as well as multiple Ka-band coverage areas, combined with cross-banding, will provide many more options to support operations than are available now.

The AN/WSC-6(V) will be able to connect directly with teleports and Marine or Army Ka-band terminals operating in a coverage area that is different from the ship. GBS uplinks may be downlinked into several different coverage areas at the same time.

Additionally, with modifications to the AN/WSC-6(V) terminals, ships will be able to receive cross-banded GBS broadcasts using the wider X-band coverage provided by the WGS, although the data rates may be somewhat reduced. The flexibility and capacity of these satellites will likely prove to be very capable of supporting most operational scenarios.

System Summary

The WGS contract was awarded to Boeing Space Systems, Inc. in January. Preliminary design review is scheduled for mid fiscal year 2001 and critical design review is scheduled for early fiscal year 2002. The first satellite is planned for launch in November 2003.

Naval Space Command has developed the first Naval Wideband Gapfiller Concept of Operations. This document is available to authorized DOD customers at the Naval Space Command SIPRNET web page. The address is www.navspace-com.navy.smil.mil. To access the CONOPS, choose "Plans," then "SATCOM."

Author Ray Gajan is employed as a senior engineer by Femme Comp, Inc. He supports Naval Space Command's Satellite Communications Plans Branch (N52) as a subject matter expert in wideband tactical satellite communications.

Interference

(Continued from page 7)

lematic. Critical actions that would enable us to improve this particular area of readiness include:

❍ Raise the importance of EMI mitigation and resolution to a level equal to that of our necessity to be able to navigate, communicate, and protect our forces. EMI mitigation and resolution should be bedrock to our requirements advocacy, system planning and development, and command, control, and communications architecture. Judging from our current state, it is apparent that EMI has been an afterthought, and then only when and while it prevents us from using our electronic systems. I'd like to believe that most of us would not buy an automobile without windshield wipers, would we?

❍ Establish EMI resolution centers that are capable of providing near real-time geographical-location, data-analysis and correlation, and other services around the clock to all users. No core infrastructure is currently readily available to mainstream DoD units. This is not to advocate an entirely new organization, necessarily, as much as a new functional capability at existing facilities.

❍ Empower and staff a centralized organization with the authority, expertise, and resources to dynamically enforce and manage the EMI program.

❍ Realign existing signal characterization and geographical-location capabilities, and make them easily accessible to mainstream users. This could represent an expanded mission role for those entities that currently perform any of these functions.

❍ Revitalize the EMI Resolution Program. After much interest from multiple sources, the Joint Spectrum Center is reworking the structure and content of the Joint Spectrum Interference Resolution Procedures (CJCSM 3320.02), which should prove a very significant step toward improving the overall program.

By increasing widespread awareness and garnering upper-level support, our collective attitude toward EMI will improve giving rise to a much more effective EMI mechanism within the DoD.

Our capacity for EMI mitigation and resolution is a very critical issue, basic to the successful accomplishment of the DoD mission. Whether this serves as an epiphany, confirmation of something you already know, or a point of contention, we simply cannot ignore how EMI regularly affects our operations with potentially crippling possibilities.

If you would like to share specific EMI examples with which you have direct experience, contribute thoughts, or have questions, please contact me at tconley@nsc.navy.mil or by phone at (540) 653-6595/15/14. I'd really like to see us rectify this predicament before we find ourselves on a future episode of The History Channel's "Military Blunders."

Author, CWO4 Todd Conley is a career communicator with over 25 years of experience in numerous aspects of military telecommunications. He currently serves as the Military Satellite Communications Officer at Naval Space Command Headquarters in Dahlgren, Va., where he heads the EMI Program.

ISC2

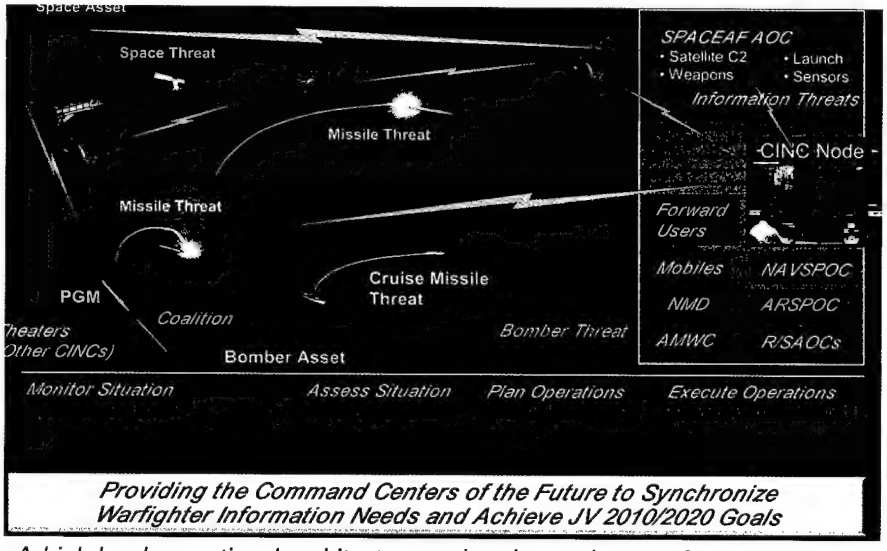
(Continued from page 8)

programs and schedules in order to leverage each other's activities.

The Naval Research Laboratory's work in distributed parallel processing was outlined by Dr. Shannon Coffey. In turn, LMMS presentations focused on their concept for developing a common enterprise infrastructure utilizing an enterprise database and workstations. LMMS envisions an application architecture that will distribute computing models, data access models and object frameworks.

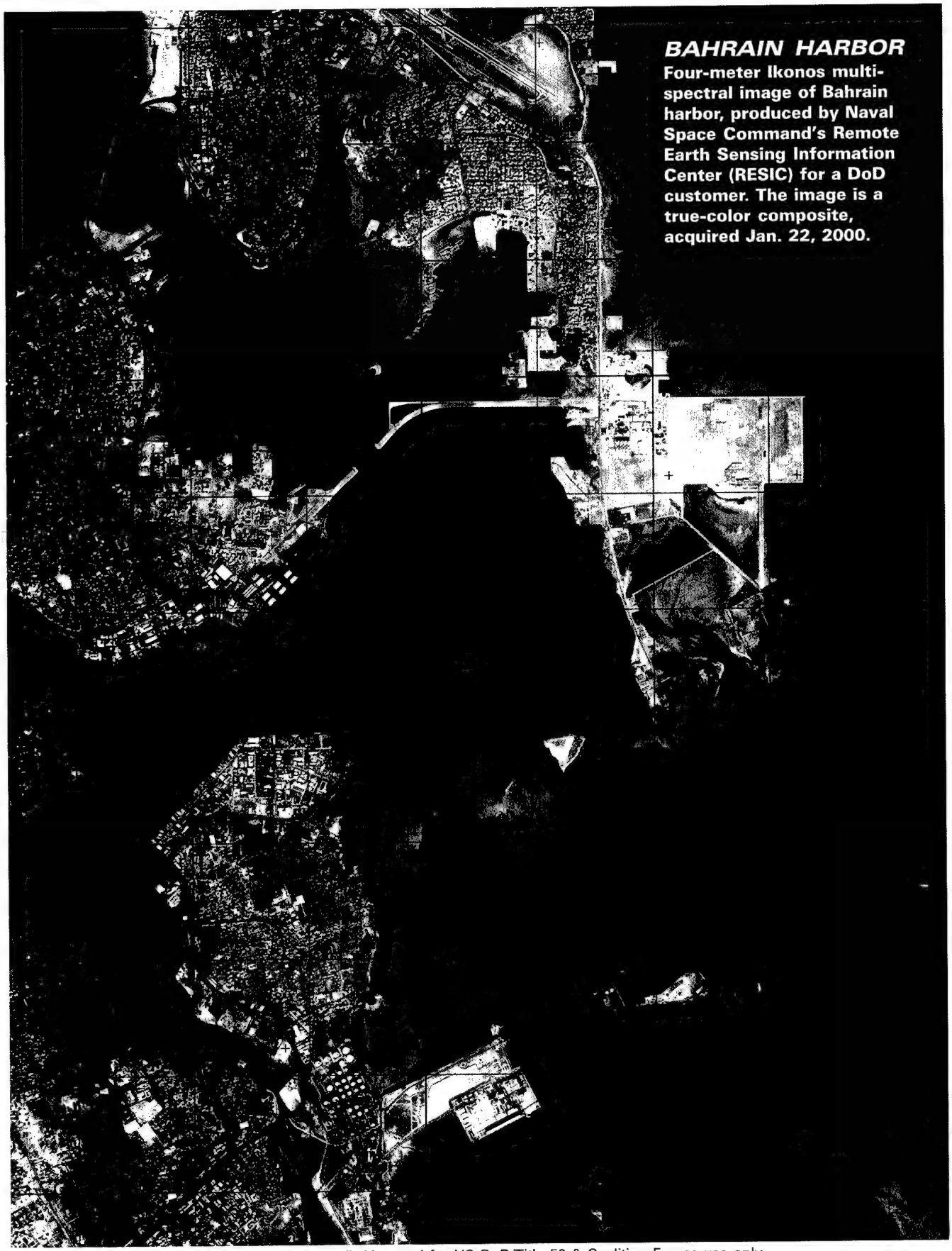
The conference concluded with an overview of ISC2 operational, system and technical architectures. These architectures support decisions, identify government/contractor team relationships, and define future NAVSPACECOM architectures and participation.

Overall, the conference provided Naval Space Command an opportunity to understand ISC2's impact as well as introduce LMMS to NAVSPACECOM missions and architectures. As a result, the discussions enabled LMMS and NAVSPACECOM personnel to focus on long-term thoughts and activities to meet ISC2 interoperability requirements.



A high-level operational architecture and end-to-end enterprise approach: sensor to C2 node to warfighter to weapon to target. LMMS Graphic

Author Steven Heinlein is a systems engineer in Naval Space Command's Engineering and Integration Branch in Dahlgren, Va.



BAHRAIN HARBOR

Four-meter Ikonos multi-spectral image of Bahrain harbor, produced by Naval Space Command's Remote Earth Sensing Information Center (RESIC) for a DoD customer. The image is a true-color composite, acquired Jan. 22, 2000.

Naval Space Command Selects Top Military,

People SPOTLIGHT

CTA1(SW) James E. Lewis
Headquarters Sailor of the Year and Shore Sailor of the Year

As the leading petty officer for the Security Office, Lewis has been responsible for streamlining reports, queries and security clearance packages processed through the office. Lewis, an administrative cryptologic technician, also played a major role in the retrofit of the command's integrated access control and alarm system.

Lewis competed with Sailor of the Year nominees from NAVSPACECOM detachments and component commands to garner Shore Sailor of the Year honors, and went on to competition for Naval District Washington Shore Sailor of the Year.

Originally from Framingham, Mass., Lewis joined the Navy in 1984. He served on USS *Mount Whitney* (LCC 20) as a non-rate seaman and subsequently was accepted to Cryptologic Technician (Administrative) "A" School. He graduated at the top of his class and went on to serve with the Naval Communications Area Master Station in Guam before separating from the Navy in April 1998.

A year later, Lewis rejoined the Navy and subsequently served with the Naval Reserve Readiness Center in Baltimore, Md., the Naval Security Group Activity at Adak, Alaska, and the Naval Space and Warfare Systems Command (SPAWAR). During his tour with SPAWAR, Lewis volunteered for a three-month assignment with Joint Task Force Southwest Asia in Riyadh, Saudi Arabia.

Lewis completed assignments in the office of the Assistant Secretary of the Air Force (Space) and on board USS *California* (CGN 36) before reporting to Naval Space Command in August 1999, where he is currently assigned as Special Security Officer Assistant.

In his off-duty time, he works with the command's Petty Officer Association, an organization he helped establish.

OS2 Kevin L. Vavra
Sea Sailor of the Year

Assigned to the command's Joint Tactical Ground Station (JTAGS) Detachment ECHO, Vavra has served as crew chief at both the European and Pacific JTAGS sites and has been responsible for supervising Sailors and Army soldiers in operation and maintenance of the theater early-warning system.

While deployed to JTAGS Det Pacific, his exceptional knowledge of worldwide ballistic missile capabilities helped ensure a 100-percent detection rate for real-world and training missions.

In the time he has served with Detachment ECHO, Vavra has also been responsible for running the physical fitness program and drafting and implementing the command's general military training (GMT) program.

Originally from Omaha, Neb., Vavra joined the Navy in 1985 and following apprentice training was assigned to USS *Lexington* (AVT 16) in the deck department. After striking the GM (Gunnersmate Guns) rating, he was selected as GMG3 and transferred to security where he was responsible for small arms and ammunition.

After advancing to second-class petty officer, Vavra converted to the operations specialist rating and accepted orders to USS *Midway* (CV 41) following "A" School. He made several deployments to include participation in Operations Desert Shield and Desert Storm.

Vavra's other assignments have included USS *Independence* (CV 62) and a shore-duty tour with Naval Reserve Readiness Center Denver, Colo., where he was responsible for training and administration of two reserve commands. He reported to Detachment ECHO in August 1996.

In his off-duty time, Vavra is active in community and multi-service jogging and running clubs, and also enjoys hiking and climbing.

CTASN Sarah C. Henry
Headquarters Junior Sailor of the Year

During the year 2000, Henry served both as Special Security Office (SSO) clerk and as an administrative assistant for the Management Support Division.

In the security office, she took the initiative to learn to operate the command's integrated access control and alarm system.. Henry also aided in over 60 briefs and debriefs for incoming and departing personnel, made over 250 corrections to the SSO database and organized more than 100 confidential files in the command's classified library.

CTA1(SW) James E. Lewis

OS2 Kevin L. Vavra

CTASN Sarah C. Henry

Civilian Personnel as 2000 People of the Year

Wendolyn S. Brown

Gloria Deloach

Eric M. Brown

Beverly Coleman Smith

Awaiting her final clearance, Henry worked out of rate in N1/8. She maintained the command's sponsor program and leave program. In addition, she volunteered time to provide SSO and administrative support to NAVSPACECOM's three Naval Reserve units.

Born in Pittsburgh, Pa., and raised in Bowling Green, Ky., Henry joined the Navy on the delayed entry program and reported for basic training in August 1999. Subsequently, she completed Cryptologic Technician (Administrative) "A" School, graduating third in her class and with honors. She reported to Naval Space Command in January 2000.

In her off-duty time, Henry is involved with the Petty Officer's Association and assists with Combined Federal Campaign and Navy Marine Corps Relief Society fund drives. She also serves as secretary for NAVSPACECOM's morale, recreation and welfare committee.

Wendolyn S. Brown
Senior Civilian of the Year

As head of the Naval Space Control Center Analyst Operations Group, Brown "distinguished herself as a flexible and cooperative team leader," states her award citation. Brown was commended for her efforts to validate and integrate multiple major system upgrades in both the command's Mission System and another critical operational database simultaneously without the loss of support to end users.

She was also cited for her initiative to integrate day staff personnel into the Naval Space Operations Center watch rotation when her group was short four members. Her insightful plan ensured the center was continuously manned 24 hours daily to maintain operational support and staff functions.

Gloria Deloach
Civilian of the Year

As an executive secretary for the commander, Deloach was praised for "her numerous and significant contributions to operational efficiency and front office integrity."

In particular, she handled the transition from one commander to another flawlessly, working to ensure that literally hundreds of military fitness reports were prepared in a timely manner and to compile and mail change of command invitations from two flag officers.

A resident of King George, Va., Deloach has 38 years of government service. She initially joined the Naval Space Surveillance Center at Dahlgren in 1966.

Eric M. Brown
Operations Watchstander of the Year

Brown was selected for his award based on his performance as a sensor data analyst in the Naval Space Operations Center (NAVSPOC). His work entails monitoring incoming observation data from the command's naval space surveillance system, providing U.S. Space Command with information on selected satellites, and maintaining the NAVSPOC data base.

Brown's efforts to correlate unidentified objects detected by the naval space surveillance network was labeled "exceptional." In one instance, Brown noted an extra object associated with an orbiting Space Shuttle mission. No other sensors were reporting the object, but he continued to process consecutive passes of the object, which later was confirmed to be a tile off the orbiter.

Beverly Coleman Smith
ADP Watchstander of the Year

As a computer operator in the ADP Operations and Maintenance Branch, Smith was commended for her outstanding support in the operation of the command's computer systems.

"Her response to both routine and non-routine system problems repeatedly prevented a change in the command's status and contributed greatly towards the high availability of the computer systems for mission processing," reads her award citation.

Smith was recognized for her persistence in correcting problems with hardware, software, communication circuits and field station outages "during her watch."

People of the Quarter Recognized

Military and civilian members of Naval Space Command were recognized for exceptional performance during the closing months of the year 2000, earning them "people of the quarter" awards for October through December.

Petty Officer 1st Class Joseph D. Parent was named Sailor of the Quarter. His award cited his efforts as sponsor program coordinator, awards board administrator, educational services officer and pass liaison representative. As the command's assistant career counselor, Parent reinstituted monthly divisional career counselor meetings to improve couseling techniques for all Sailors.

In addition to his duties, Parent volunteered as a site representative for the Navy and Marine Corps Relief Society and as a volunteer in the command's Adopt-A-School partnership with a local grade school.

Originally from Providence, R.I., Parent joined the Navy in 1991 and specialized as a yeoman. He served with Personnel Support Detachment, Rota, Spain and VFA-86 at Naval Air Station Cecil Field, Fla., prior to reporting to Naval Space Command in 1997. He converted to the Navy counselor rating in December.

Seaman Apprentice Sarah C. Henry, a native of Bowling Green, Ky., was selected as Junior Sailor of the Quarter on the basis of her work as assistant Special Security Officer clerk.

Henry reported to NAVSPACECOM in January 2000 after completing Cryptologic Technician (Administrative) "A" School, following her enlistment in August 1999. Her award commended her initiative in providing security briefs and debriefs, maintaining a security database and filling key positions in the Security Office during unexpected personnel losses.

Henry provides special security and administrative support to three Naval Reserve units totaling over 100 personnel. She also volunteers as secretary for the command's morale, welfare and recreation committee.

Dawn M. Lowe was named Senior Civilian of the Quarter. As an assistant program manager in Naval Space Command's Information Systems Division, her award recognized her work as the command and control systems program manager and chair of both the Non-Mission

(Continued on page 19)

NC1(AW) Parent

CTASN Henry

Dawn Lowe

Kathy Sargent

Lisa Harris

Nolan Prince

SATCOM Officer Receives Copernicus Award

Chief Warrant Officer Todd Conley from Naval Space Command has received the Copernicus Award cosponsored by AFCEA and the U.S. Naval Institute. The award recognizes individual contributions to naval warfare in the disciplines of C4I, information systems and information warfare.

CWO4 Conley

Conley serves in NAVSPACECOM's Satellite Communications Operations Branch. His nomination for the Copernicus Award highlighted his work as an action officer for ultra-high-frequency (UHF) and extremely-high-frequency (EHF) satellite communications and electromagnetic interference (EMI).

He is leading an initiative to modernize EHF communications management software tools that are crucial to current and future operations. In the interest of improving EMI awareness and resolution, he developed a standardized reporting template to be used for all interference events throughout DoD.

He also co-authored the Joint UHF Military Satellite Communications EMI Concept of Operations and submitted a Space and Electronic Warfare Studies and Analysis Program proposal for a single DoD entity to be established with complete EMI oversight and resolution authority.

Conley chaired a UHF satellite management meeting between the Joint Staff, U.S. Space Command, Space and Naval Warfare Systems Command, Naval Computer and Telecommunications Command, and the Naval Computer and Telecommunications Area Master Stations (NCTAMS) that was integral to improved tactical SATCOM support to all DoD organizations.

In addition, he coordinated refresher training for the NCTAMS on the Demand Assigned Multiple Access (DAMA) Semi-Automatic Controller and Network Control Station, as well as the Satellite Communications System Analyzer.

Warrant Officer Conley was one of 26 Navy civilians, Sailors and Marines who were selected for the 2000 Copernicus Awards.

People of the Quarter

(Continued from page 18)

System Working Group and Command and Control Network Users' Group.

Lowe also managed an initiative to upgrade desktop computer resources within the command, to include the installation of new network cabling and distribution of over 120 computers, 24 printers and associated peripherals.

Originally from Hollywood, Md., Lowe joined Naval Space Command in 1998. Her prior civil service experience dates to 1990 and included clerical positions within the Departments of the Army and Navy.

Kathy S. Jones, a computer assistant in the Information Systems Division, was selected as Civilian of the Quarter. Her award was based upon her handling of procurement functions in support of the command's upgrade of its local area network, desktop computers, mission processing system and the Remote Earth Sensing Information Center.

Jones was responsible for obligating funds, developing accurate equipment lists, providing vendor information to the contracting office, monitoring the procurement process and evaluating the condition of equipment as it arrived.

Lisa S. Harris was named Operations Watchstander of the Quarter in recognition of her performance as an orbital analyst in the Naval Space Operations Center.

Harris was commended for her operation of database maintenance functions and her performance of satellite conjunction assessments, which ensured the safety of astronauts and cosmonauts on board Space Shuttle, Mir and International Space Station missions.

Originally from King George, Va., Harris has worked at the command since 1981.

Nolan P. Prince was selected as ADP Watchstander of the Quarter. His award commended a number of decisive actions he took as a computer operator in the ADP Maintenance and Operations Branch.

Of particular note were his efforts to correct a problem on the command's mail relay systems, successfully preserving all messages, and his detection and correction of a communications host problem, resulting in a minimum down time.

Decorated Service & Special Recognition

Navy & Marine Corps Commendation Medals

Cmdr. Laurie J. Gibb ... as executive officer for Naval Computer and Telecommunications Station, Pensacola, Fla., from October 1998 to May 2000, and as officer in charge of Naval Computer and Telecommunications Area Master Station Atlantic Detachment, Pensacola from May to December 2000.

Cmdr. Cheryl D. Blake ... as executive officer of Naval Computer and Telecommunications Station, Jacksonville, Fla. From January 1999 to January 2001.

Lt.Cmdr. Bruce R. Demello ... as the Pacific Fleet Space Support Team member from February 1998 to February 2001.

Lt.Cmdr. Danny K. Busch ... as Naval Space Support Team member and flag aide from February 1998 to February 2001.

Lt.Cmdr. Jeffrey L. Goerges ... as assistant for Special Technical Operations and watch officer for the Naval Space Operations Center from March 1999 to February 2001.

ISC Frank R. Roach ... as leading chief petty officer for the Intelligence Branch from December 1998 to March 2001.

Navy & Marine Corps Achievement Medals

CTO2 Rebecca R. Stidam ... for service as a watch supervisor in the Joint Information Processing Center at Naval Space Command from March 1998 to March 2001.

OS2 Brian R. Groat ... as force enhancement petty officer, space warning petty officer and space surveillance officer from January 1998 to May 2001.

CTASN Sarah C. Henry ... as administrative assistant and assistant Special Security representative from January to December 2000.

CTR2 William G. Kerner ... as Special Technical Operations petty officer from February 2000 to January 2001.

Good Conduct Awards

BUC (SCW) Rodney A. Gardner (5th)
CTR1 Anthony L. McCray (3rd)
IT2 (SW) Annette Y. Chivers (3rd)
OS2 Wilbert Boneparte III (2nd)
ET3 Sandra L. Spratling (1st)

Letters of Commendation

OS3 Kimberly N. Harper
CTM3 Tanya M. Pendergaph
EW1 (SW) Sean E. Whiteman
Gloria H. Deloach
CTASN Sarah C. Henry
NC1 (AW) Joseph D. Parent
IS2 (AW) Christopher W. McKee
CTR2 Donel S. Hall
IS2 Melinda F. Brown
Beverly M. Coleman Smith
Nolan P. Prince
Lisa S. Harris
Wendolyn S. Brown
Eric M. Brown
Dawn M. Lowe
Kathy S. Jones

NMCI Appreciation Awards

Diane B. Jacobs, Anita Hicks, Richard Mendez and Nancy Mullen received certificates of appreciation from the Department of the Navy's Chief Information Officer for their contribution to the Navy Marine Corps Intranet (NMCI). They were commended for their efforts during the formulation of strategy, development of the request for proposal, and the Navy's report to Congress regarding NMCI, which culminated in a successful contract award on Oct. 6, 2000.

NMCI "will afford transparent and seamless interoperability and end-to-end connectivity" throughout the Department of the Navy, the award citation reads. As the Navy's contribution to the Department of Defense's larger vision — the DoD Global Information Grid — NMCI will be a critical element of interoperability with joint and combined forces, the citation adds.

CALENDAR

Meetings & Symposia

Global Air & Space 2001 International Business Forum and Exposition, May 7-9, Arlington, Va. Organized by the American Institute of Aeronautics & Astronautics (AIAA). Call (800) 739-4424 or (703) 264-7535.

4th National Space Forum, June 5-6, Washington, D.C. at the National Academy of Sciences. Theme: "National Security Space Leadership: Military, Intelligence, Commercial and Civil." Sponsored by the American Astronautical Society, National Space Society and National Space Club in cooperation with the National Security Space Architect. Call (703) 866-0020 or email aas@astronautical.org.

TechNet 2001 International Convention & Exposition, June 5-7, Washington, D.C. Sponsored by AFCEA. Call (800) 564-4220 or (703) 631-6200 or visit website www.technet2001.org.

10th AIAA/BMDO Technology Conference & Exhibit, July 23-26, Williamsburg, Va. Sponsored by AIAA. Call (800) 739-4424 or (703) 264-7535.

AIAA Space 2001 Conference & Exposition, Aug. 28-30, Albuquerque, N.M. Sponsored by AIAA. Call (800) 739-4424 or (7030) 264-7535.

Courses & Seminars

Following courses sponsored by the AFCEA Professional Development Center. Call (800) 336-4583, ext. 6135 or (703) 631-6135 or visit Web page http://www.afcea.org.

❍ The U.S. Intelligence Community, May 22-24, Fairfax, Va.
❍ Network-Centric Warfare, May 30-June 1 and Sept. 5-7, Fairfax, Va.

Following courses sponsored by the Applied Technology Institute. Call (888) 501-2100 or (410) 531-6034 or visit Web page http://catalog.com/hitekweb/.

❍ Fundamentals of Synthetic Aperture Radar, June 4-5, Sterling, Va.
❍ Advanced Synthetic Aperture Radar, June 6-8, Sterling, Va.
❍ GPS Technology, June 4-7, Washington, D.C.
❍ Satellite Communication Systems Engineering, June 4-6, Los Angeles, Calif., and Sept. 11-13, Washington, D.C.
❍ Satellite RF Communications and Onboard Processing, June 12-14, Washington, D.C.
❍ Fundamentals of Orbital and Launch Mechanics, June 25-27, Cape Canaveral, Fla.
❍ Satellite Design and Technology, June 25-28, Cape Canaveral, Fla.

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